SECTION FOUR: PHONOLOGY AND PHONOTACTICS

27. PHONOLOGY

27.1. Phoneme inventory

27.1.1. Consonants

Warao has eleven consonant phonemes, as shown in TABLE 19 below:

	bilabial	alveolar	palatal	velar	glottal
stops	p	t		k k^{w}	
fricatives		s			h
flap		r			
nasals	m	n			
semi-cons.	w		y		

TABLE 19: Consonants

Consonant phonemes are shown to contrast in identical and overlapping environments by the examples in (295)

(295) a. INITIAL POSITION

STOPS

pahi	'front of leg'
tahi	'a step'
kahi	'slip'
k^{w}ahi	'head top'

FRICATIVES

hahi	'untie'
saha	'kind of bat'

FLAP

rahi	'kind of bee'

NASALS

mahi	'liver'
nahi	'kind of fish'

SEMI-CONSONANTS

wahi	'canoe'
yahi	'lie down'

b. MEDIAL POSITION

STOPS

ebe 'because'
etere 'bell'
eku 'in'
ek^{w}aka 'fan'

FRICATIVES

ehe 'piranha'
esi 'put away'

FLAP

ereta 'fear'

NASALS

emi 'show'
eneru 'dig'

SEMI-CONSONANTS

ewehi 'grate'
eyene 'river fork'

27.1.2. Vowels

Warao has five vowels, as shown in TABLE 20 below:

	front	central	back
high	i		u
mid	e		o
low		a	

TABLE 20: Vowels

The vowel phonemes contrast in identical or overlapping environments, as shown in (296)

(296) a. INITTIAL AND FINAL POSITION

aha 'cigar'
ehe 'piranha'
ihi 'hot'
oho 'cough'
uhu 'basket'

b. MEDIAL AND FINAL POSITION

haka 'grass'
heke 'hoarse'
hikiri 'a fly'
hoko 'white'
huku 'bad smell'

27.2. Phonetic realizations of the phonemes

27.2.1. Consonants

Warao consonant phonemes show both voiced and voiceless allophones. The set of consonant allophones is shown in (297)

(297)

STOPS	FRICATIVES
/p/ -------> [p][b]	/h/ -------> [h]
/t/ -------> [t]	/s/ -------> [s]
/k/ -------> [k]	
/k^{w}/ -------> [k^{w}]	

FLAP	NASALS
/r/ -------> [d][r]	/m/ ------> [m]
	/n/ ------> [n]

SEMI-CONSONANTS

/w/ -------> [w]
/y/ -------> [y]

Voiced allophones in the language are mostly found in word initial position; in other cases, they appear inter-vocalically. However, not all word-initial consonants are voiced and there are differences in the frequency of voiceless allophones. For example, [b][p] may be said to be almost in free variation in most word positions. It is common to hear [potopoto] or [botoboto]. But, [b] will tend to appear in Spanish loans, whether they contain /p/ or /b/ stops, for instance, Spanish pelota 'ball' borrows as Warao berota, cambiar 'change' as kabiata and barco 'ship' as baroko. Among the speakers of the area under research for this dissertation, initial [p] is found in a very reduced set of lexical items, for example, [payara] 'kind of fish' which never was heard with the voiced stop. In Warao, [p] and [b] are unaspirated as all remaining stops.

On the other hand, the /r/ allophones [d][r] occur in quite specific phonological environments: (i) [d] always appears initially, and (ii) [r] is always intervocalic. In Warao, the [r] variant has the highest frequency of occurrence given the fact that to the extensive native lexicon containing such allophonic realization, Spanish loans including initial or medial /r//l/ and /d/, medial /r/ and medial clusters such as /dr/ must also be incorporated. Some examples are presented in (298)

(298)	SPANISH	WARAO
	deber	erebe 'owe'
	barril	bariri 'vat'
	limón	arimona 'lemon'
	fiscal	bisikari 'fiscal'
	bala	bara 'pellot'
	pólvora	borobora 'gun powder'
	Pedro	bero 'Peter'

Warao semi-consonants /w/ and /y/, given their inherent non-syllabic feature, are always initial segments of diphthongs and triphthongs. These phonemes contrast with syllabic /u/ and /i/, as shown in the pairs in (299-301)

(299) a. iabu 'abandon'
b. yabu 'chase'

(300) a. iasi 'smash'
b. yasi 'hat'

(301) a. ua 'kind of fish'
b. wa 'canoe'

The rest of the Warao consonant phonemes and their allophones exhibit a quite predictable behavior from the universal existing phonological theory.

27.2.2. Vowels

The set of vowel allophones in Warao is as follows in (302) below

(302) /i/ ----> [i]
/e/ ----> [e]
/a/ ----> [a]
/o/ ----> [o]
/u/ ----> [u]

These vowels are all oral, being [i][e][a] unrounded and [o][u] rounded.

Nasalization in the vowels and the semi-consonants [w][y], as well as the glottal fricative [h], is a phonologically-conditioned process, depending upon the presence of a preceding nasal consonant, as illustrated in (303)

(303) [mɓâû] 'You, give (it)'
[nâõ] 'come'
[mɔ̃yɔ̃] 'kind of bird'
[inãwãhã] 'dry season'

A nasalized string in Warao is interrupted by any non-nasal consonant. For example:

(304) [mɛ̃hɔ̃kohi] 'shadow'
[nâõte] 'come/will come'

28. PHONOTACTICS

Roots in Warao almost always begin with a consonant and end with a vowel. The first tendency is the strongest, and indeed, the number of vowel initial roots, by dictionary count, is reduced as compared with those of consonant initial ones. Consonants never cluster in Warao and are forbidden in syllable final position, a trait that is evidenced also in Spanish loans containing syllables ending in a consonant, which in Warao undergo deletion or rising of an epenthetical subsequent vowel, as (305) exemplifies:

(305)

SPANISH	WARAO	
arróz	aro	'rice'
carta	karata	'letter'
gobernador	kobenahoro	'governor'

Conversely, vowels can cluster forming roots of up to four segments, provided that not two of the same quality get into direct contact.

The behavior of consonants and vowels as far as the possibilities of their combination is concerned leads to conclude that the basic syllable types in Warao are (C)V, in which the vowel is a nucleous which a consonant may, or may not, precede, either root initially, medially or finally. The possible CV combinations in Warao are presented in TABLE 21

	i	e	a	o	u
p	---	pe	pa	po	---
b	bi	be	ba	bo	bu
t	ti	te	ta	to	tu
k	ki	ke	ka	ko	ku
k^w	k^wi	k^we	k^wa	k^wo	---
s	si	se	sa	so	su*
h	hi	he	ha	ho	hu
d	di**	de**	da**	do**	du**
r	ri***	re***	ra***	ro***	ru***
m	mi	me	ma	mo	mu
u	ni	ne	na	no	nu
w	wi	we	wa	---	---
y	---	ye	ya	yo	yu

TABLE 21: root-initial, root-medial and root-final CV combinations

======> KEY: * not observed root-finally
** only root-initially
*** only root-medially and root-finally

Additionally, the possible V-syllable sequences in Warao are summarized in TABLE 22 below:

i	e	a	o	u
--	ei	ai	oi	ui
ie	--	ae	oe	ue
ia	ea	--	oa	ua
io	eo	ao	--	--
iu	eu	au	ou	--
iai	eai	--	oai	uai
iae	eae	---	oae	uae
iao	---	---	---	---
iau	---	---	oau	---
----	----	----	oiai	----
----	----	----	oiae	----
----	----	----	----	ueai
----	----	----	----	ueae
----	euai	----	----	----
----	euae	----	----	----

TABLE 21: Possible V-syllables and V-syllable sequences

The presence of V-syllable sequences in Warao closely correlates with the chain-suffixing of person, aspect, mood and tense markers to verbs:

(306) tue -a -e -ine
burp PUNC PAST 1sg.S
'I burped'

Also, some V sequences are inherent to the root own shape, as evidenced by

(307) huai 'come out'

(308) aua 'kind of fish'

The most frequent (C)V groups to build monosyllabic, disyllabic, trisyllabic and polysillabic forms are V, CV, VV, CVV, CVCV, CVVV, CVCVVV and CVVVCV. All of these arrangements may reduplicate to give rise to many language onomatopoeic items, such as seisei [CVV+CVV] 'something fading away', sasasasa [CV+CV+CV+CV] 'sound of a rattling instrument',

maremare [CVCV+CVCV] 'sound for referring to music', kuaikuai 'bouncing up and down', etc.

The predominant pattern of heavy stress is on the penultimate vowel, antepenultimate heavy stress remaining confined to some onomatopoeic words and ultimate heavy stress to Spanish loans which are heavily stressed in the ultimate syllable in that language. Heavy stress almost without exception falls on the second syllable from the end in disyllables, trisllables and polysyllables. Monosyllables generally bear heavy stress if the syllable pattern in CV, and weak stress if the syllable patern is V (Romero Figueroa, 1986b). In some cases, monosyllables are completely unstressed. Further, heavy stress in Warao often shifts to the right in search for penultimate syllables once roots take inflections. This displacement obviously occurs across morphemic boundaries. An example of Warao stress shift is provided in (309)

(309) nahóro

nàhoró -te	'You eat'
nahòro -náka	'You do not eat'
nàhorò -naká -ra	'Don't you eat?'

The marking of weak stress in (309) agrees with a rule by which alternate syllables are stressed with weak secondary stress, counting back from the heavily stressed syllable, and syllables not stressed with heavy stress are unstressed.

In Warao, no two words are distinguished by placement of stress. Stress has a purely delimitative function in the language. Root boundaris may be set departing from the syllables bearing heavy stress which will always be penultimate, alterning with unstressed and weak syllables either to the right or to the left. This behavior implies that the next heavily-stressed syllables necessarily belong to other roots. Root boundary setting also demand an analysis of allophone distribution, specially that of those solely appearing word-initially.

A Reference Grammar of Warao

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